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Report of the Secretary-General of the International Seabed Authority under article 166, paragraph 4, of the United Nations Convention on the Law of the Sea

I. Introduction

1. The present report of the Secretary-General of the International Seabed Authority is submitted to the Assembly of the Authority under article 166, paragraph 4, of the 1982 United Nations Convention on the Law of the Sea ("the Convention"). It provides a detailed account of the work of the Authority during the period July 2001 to June 2002.

2. Over the past five years the efforts of the members of the Authority and the Secretariat have been directed primarily towards taking the organizational decisions necessary for the proper functioning of the Authority as an autonomous international organization within the United Nations system, including election of the various organs and bodies of the Authority, adoption of the rules of procedure for such organs and bodies, adoption of financial and staff regulations and rules and a Headquarters Agreement as well as development of a stable budget and scale of assessment. In terms of substantive work, a significant achievement of the Authority has been the adoption, in 2000, of the Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area and the subsequent conclusion of contracts for exploration with the former registered pioneer investors. The Authority has also successfully developed a programme of technical workshops designed to broaden scientific knowledge on issues related to deep seabed mining. As noted in the annual report of the Secretary-General to the Authority at its seventh session (ISBA/7/A/2, para. 51), the substantive work of the Authority is likely to become increasingly technical in nature in the future. In the light of this, the present report also contains an analysis of current and anticipated issues relevant to the work of the Authority and considers possible future directions for the Authority's work programme.

II. Membership of the Authority

3. In accordance with article 156, paragraph 2, of the Convention, all States parties to the Convention are ipso facto members of the Authority. As at 30 June 2002, there were 138 States parties to the Convention.

4. In the report of the Secretary-General to the Authority at its fourth session, in 1998, the Secretary-General noted (ISBA/4/A/11, para. 7) that 37 members of the Authority which had become States parties to the Convention prior to the adoption of the Agreement relating to the implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982 had not yet completed the necessary procedural steps to become parties to the Agreement. The Agreement was adopted on 28 July 1994 by the General Assembly of the United Nations in its resolution 48/263 and entered into force on 28 July 1996. After the adoption of the Agreement, any

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instrument of ratification or formal confirmation of or accession to the Convention shall also represent consent to be bound by the Agreement. No State or entity may establish its consent to be bound by the Agreement unless it has previously established or establishes at the same time its consent to be bound by the Convention. Since 1998, Costa Rica, Indonesia, Tunisia and the United Republic of Tanzania have acceded to the Agreement and during successive debates in the Assembly on the report of the Secretary-General several other member States have indicated their intention to accede to the Agreement as soon as possible. Nevertheless, it continues to be a matter of concern that, as of 30 June 2002, there remain 33 members of the Authority which have not yet completed the necessary procedural steps to become parties to the Agreement. Those States are: Angola, Antigua and Barbuda, Bahrain, Bosnia and Herzegovina, Botswana, Brazil, Cameroon, Cape Verde, Comoros, Cuba, Democratic Republic of the Congo, Djibouti, Dominica, Egypt, Gambia, Ghana, Guinea-Bissau, Guyana, Honduras, Iraq, Kuwait, Mali, Marshall Islands, Mexico, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Sao Tome and Principe, Somalia, Sudan, Uruguay, Viet Nam and Yemen. In accordance with repeated requests by the Assembly, the Secretary-General has circulated annually a note verbale to the States parties mentioned above, drawing their attention to the need to become party to the Agreement. The last such note was circulated on 10 January 2002, in which the Secretary-General drew the attention of the States parties concerned to the relevant paragraphs of the report of the Secretary-General for 2001 (ISBA/7/A/2) and to paragraph 1 of General Assembly resolution 56/12 of 28 November 2001, calling upon all States that have not done so, in order to achieve the goal of universal participation, to become parties to the Convention and the Agreement.

III. Sessions of the Authority

5. The seventh session of the Authority was held from 2 to 13 July 2001. Peter Donigi (Papua New Guinea) was elected President of the Assembly for the seventh session. Tadeusz Bachleda-Curus (Poland) was elected President of the Council. During the seventh session, elections were held, in accordance with the provisions of the Convention and the Agreement, for members of the Finance Committee and of the Legal and Technical Commission.

6. At its 79th meeting, on 10 July 2001, the Assembly elected the following as members of the Finance Committee for a five-year term commencing on 1 January 2002: Domenico Da Empoli (Italy), Hasjim Djalal (Indonesia), Peter Döllekes (Germany), Ivo Dreiseitl (Czech Republic), Aung Htoo (Myanmar), Boris G. Idrisov (Russian Federation), Tadanori Inomata (Japan), Liu Jian (China), Jean-Pierre Lévy (France), Juliet Kalema Semambo (Uganda), Joseph Samih Matta (Lebanon), Paul McKell (United Kingdom of Great Britain and Northern Ireland), Coy Roache (Jamaica), Narinder Singh (India) and Florentina Adenike Ukonga (Nigeria).

7. At its 72nd meeting, on 5 July 2001, the Council decided, in accordance with article 163, paragraph 2, of the Convention, to increase the size of the Legal and Technical Commission to 24 members, without prejudice to future elections and the claims of the regional groups and interest groups. On the same date, the Council elected the following 24 candidates as members of the Commission: Sami Ahmad Addam (Lebanon), Ferry Adhamhar (Indonesia), Shahid Amjad (Pakistan), Frida Maria Armas Pfirter (Argentina), Helmut Beiersdorf (Germany), Samuel Sonah Betah (Cameroon), Arne Bjørlykke (Norway), Baïdy Diéne (Senegal), Galo Carrrera Hurtado (Mexico), Walter de Sá Leitão (Brazil), Miguel Dos Santos Alberto Chissano (Mozambique), Ivan F. Gloumov (Russian Federation), Mohammed M. Gomaa (Egypt), Albert Hoffman (South Africa), Yuji Kajitani (Japan), Jung-Keuk Kang (Republic of Korea), Jean-Pierre Lenoble (France), Yuwei Li (China), Lindsay Murray Parson (United Kingdom), M. Ravindran (India), Giovanni Rosa (Italy), Alfred Thomas Simpson (Fiji), Rodrigo Miguel Urquiza Caroca (Chile) and Inge K. Zaamwani (Namibia).

8. The Council also received the report of the chairman of the Legal and Technical Commission on the work of the Commission during the seventh session and noted that, pursuant to regulation 38 of the Regulations for Prospecting and Exploration for Polymetallic Nodules in the Area, the Commission had issued a set of recommendations for the guidance of contractors for the assessment of possible environmental impacts arising from exploration for polymetallic nodules in the Area.

IV. Protocol on Privileges and Immunities

9. The Protocol on the Privileges and Immunities of the International Seabed Authority, adopted by the Assembly at its 54th meeting, on 26 March 1998, was opened for signature at Kingston on 26 August 1998. In accordance with its article 16, the Protocol remained open for signature at United Nations Headquarters in New York until 16 August 2000. As at that date, the Protocol had been signed by 28 members of the Authority: Bahamas, Brazil, Chile, Côte d'Ivoire, Czech Republic, Egypt, Finland, Ghana, Greece, Indonesia, Italy, Jamaica, Kenya, Malta, Namibia, Netherlands, Oman, Pakistan, Portugal, Saudi Arabia, Senegal, Slovakia, Spain, Sudan, the former Yugoslav Republic of Macedonia, Trinidad and Tobago, United Kingdom and Uruguay. As at 30 June 2002, the Protocol had been ratified by the Czech Republic, Egypt, Slovakia, Spain and the United Kingdom. On 8 September 2000, Croatia acceded to the Protocol. The Protocol will enter into force 30 days after the date of deposit of the tenth instrument of ratification or accession. It is hoped that States members of the Authority will give consideration to the early ratification of or accession to the Protocol.

V. Permanent representatives to the Authority

10. As at 30 June 2002, Argentina, Brazil, Chile, China, Costa Rica, Cuba, France, Gabon, Germany, Haiti, Italy, Jamaica, Mexico, the Netherlands and Trinidad and Tobago had established permanent missions to the Authority.

VI. Relations with the host country

11. In its debate on the report of the Secretary-General during the seventh session, the Assembly took note of the long delay in completing a supplementary agreement concerning the headquarters of the Authority and urged the Secretary-General to continue his efforts to make progress with regard to the supplementary agreement. Regrettably, despite the best efforts of the Secretariat, the Secretary-General has been unable to make significant progress in this regard.

12. As previously reported to the Assembly, it will be recalled that, in March 1998, the Minister for Foreign Affairs and Foreign Trade of Jamaica had informed the Secretary-General by letter that the Government of Jamaica had decided to offer the building currently occupied by the Authority and known as Block 11 for the permanent use and occupation of the Authority as its headquarters. The Secretary-General informed the Assembly of the offer on 17 March 1998, noting that clarification would have to be obtained from the Government of Jamaica with respect to the terms and conditions of the offer and that a report on the financial and other implications of the offer for the Authority would be prepared as soon as relevant information was available. Of particular concern were the maintenance costs, the structural condition of the building, the condition of major equipment and the question of refurbishment.

13. The Secretary-General reported to the Assembly on the offer by the Government of Jamaica at the fifth session of the Authority, in August 1999. After consideration of the Secretary-General's report, the Finance Committee recommended to the Assembly that it accept the offer on the basis that the Authority would occupy only such space within the building as might be required. The Finance Committee also recommended that the Secretary-General should pursue negotiations with the host country, based on the most complete information available, in order to secure the best terms for the maintenance of the premises.

14. At its 67th meeting, on 25 August 1999, the Assembly approved the Agreement between the International Seabed Authority and the Government of Jamaica concerning the headquarters of the Authority and accepted with appreciation the offer of the Government of Jamaica for a long-term lease of the second floor and such other space as might be required in the building for the use and occupation by the Authority as its permanent headquarters. The Assembly further requested the Secretary-General to negotiate with the Government of Jamaica, pursuant to article 2 of the Headquarters Agreement, a supplementary agreement concerning the use and occupation of the permanent headquarters. At the 68th meeting of the Assembly, on 26 August 1999, in a formal ceremony, the Headquarters Agreement was signed by the Secretary-General, on behalf of the Authority, and by the Deputy Prime Minister and Minister for Foreign

Affairs of Jamaica, the Hon. Seymour Mullings, on behalf of the Government of Jamaica.

15. In October 1999, the Secretary-General invited the Government of Jamaica to commence as soon as possible the negotiations on the supplementary agreement. In November 1999, the Government of Jamaica indicated that it was making the necessary internal arrangements for the internal transfer of the title to the proposed headquarters building. Consequently, it was not until 17 May 2000 that a preliminary round of discussions could take place between the Authority and the Government. At that meeting a draft supplementary agreement, prepared by the Secretariat on the basis of standard agreements used by the United Nations and organizations of the United Nations system worldwide, was provided to the Government of Jamaica for its consideration. On the matter of the contribution towards maintenance costs, the Secretary-General noted that, on the basis of the information that had been made available to the Secretariat, the Authority's current contribution represented more than two thirds of the total cost of the maintenance of the entire building and, on a per-square-foot basis, exceeded the commercial rents payable elsewhere in Kingston. Further, the Authority was being asked to contribute to the upkeep of the Jamaica Conference Centre in addition to the amount payable for the use of the Centre for the sessions of the Authority. The Secretary-General stressed that such arrangements would be unacceptable to member States and requested the Government of Jamaica to provide accurate and transparent information concerning the actual costs of maintenance of the headquarters building.

16. Despite further communications in writing from the Secretary-General dated 19 May, 7 June and 15 December 2000 and 8 March 2001, no such information was made available to the Secretary-General and no further meeting with the representatives of the Government of Jamaica took place until 24 May 2001. By that time, the Secretary-General had taken a decision, communicated in writing to the Government of Jamaica on 15 December 2000 and again on 8 March 2001, to discontinue payment of the current charges for maintenance of the headquarters building on the basis that, 20 months after the adoption of the Headquarters Agreement, it would be fiscally irresponsible to continue to pay maintenance charges calculated in a manner which was not transparent. At the meeting on 24 May 2001, the Government of Jamaica submitted a number of proposed amendments to the draft supplementary agreement, most of which were unacceptable to the Authority as they departed significantly from and had the effect of diluting the provisions of the standard headquarters agreements used by the United Nations. On 9 July 2001, during the seventh session, the Government of Jamaica provided to the Secretariat limited information on certain elements of the maintenance and related costs for the headquarters building for the period from January to December 2001.

17. On 26 July 2001, the Secretary-General wrote to the Government of Jamaica reiterating the basic position of the Authority with regard to the supplementary agreement and again requesting accurate and transparent information, in the form of audited accounts, concerning the actual costs of maintenance of the entire building as well as a detailed breakdown of the overall floor space within the building. On 30 January 2002, the Secretary-General took the opportunity to brief the incoming Minister for Foreign Affairs and Foreign Trade on the status of the negotiations relating to the supplementary agreement and to reiterate the need for accurate and transparent information to be provided in accordance with the instructions of the Finance Committee. On 6 February 2002, the Secretary-General followed up the meeting with a detailed letter on the subject to the Minister.

18. On Friday, 12 April 2002, the Ministry of Foreign Affairs and Foreign Trade sent to the Secretariat by facsimile summaries of expenditure on administration, building maintenance and service costs relating to the whole of Block 11 for the period from 1 April 1996 to 31 March 1999. On Monday, 15 April 2002, without warning, and in contravention of the Headquarters Agreement, essential services to the Authority's premises, including air conditioning and janitorial services, were discontinued, forcing the Secretariat to close for two days. Following urgent consultations with the Ministry of Foreign Affairs and Foreign Trade, services were finally restored on Wednesday, 17 April.

19. With respect to the supplementary agreement, the position of the Secretary-General, as communicated on numerous occasions to the Government of Jamaica, remains as follows:

(a) The supplementary agreement should cover in a comprehensive manner both the occupation of the

headquarters building and the use of the Jamaica Conference Centre;

(b) The portion of the first floor of the headquarters building occupied by the Authority and refurbished at the Authority's expense should be treated as part of the headquarters of the Authority and not as part of the Jamaica Conference Centre;

(c) The contribution of the Authority to the maintenance of the building within which the headquarters is located should be based on the real occupancy of the building, should be transparent, and should reflect the basic understanding of member States that the Government of Jamaica will provide the Authority with all necessary facilities in return for which the Authority will contribute its share of the maintenance costs for the part of the premises which it occupies. The Authority cannot, as a matter of principle, be expected to bear the cost of "repair and maintenance of the building within which the premises are located, including restoration, renovation and major repairs or extensive maintenance, including structural repairs and replacement to the buildings, installations, fixtures and equipment, such as building control equipment, air-conditioning equipment, pipes, plumbing and electrical wiring";

(d) The current charges for the use of the Jamaica Conference Centre (US$ 18,831 per week) are excessive. In particular, in view of the short time in which the Authority uses the Conference Centre each year, it is not acceptable for the Authority to be expected to bear the costs of maintenance and repair of basic building systems, such as air conditioning. One of the fundamental understandings of member States was that the Authority's use of the Conference Centre would be on terms no less favourable than those applicable to the Government of Jamaica and its agencies;

(e) Furthermore, the terms of the supplementary agreement, including the maintenance contribution, must be retroactive to the date of signature of the Headquarters Agreement.

20. In addition to the fundamental issue of the level of contribution to the maintenance costs, a number of other critical issues relating to the headquarters of the Authority remain unresolved. These include the definition of the perimeter of the headquarters building, which is essential to determine the precise area which falls under the jurisdiction of the Authority as well as to apportion landscaping and associated maintenance and security costs, the issue of public access, parking and security around the headquarters building, and the completion of essential refurbishment and maintenance work to the fabric of the building.

21. In view of the fact that nearly three years has elapsed since the signature of the Headquarters Agreement, it is a matter of the greatest concern and the utmost regret that no substantive progress has been made in the negotiation of a supplementary agreement.

VII. The Secretariat

22. The Secretariat is organized into four main functional areas: Office of the Secretary-General; Office of Administration and Management; Office of Legal Affairs; and Office of Resources and Environmental Monitoring. The approved establishment of the Secretariat for 2001 was 37 posts, of which 33 were encumbered as at 30 June 2002. It was noted in the report of the Secretary-General to the seventh session (ISBA/7/A/2, para. 13) that, although recruitment and selection procedures were carried out for all Professional posts, and candidates identified for a number of positions, it had proved impossible to attract candidates with appropriate qualifications and experience for posts in certain key areas. Since that time, the situation has improved slightly and, between November 2001 and April 2002, recruitment was completed for the posts of Chief, Administration and Management, and Marine Scientific Officer (Environment).

VIII. Budget and finance

A. Budget

23. The budget of the Authority for the financial period 2001-2002 is the first budget to cover a two-year financial period, as envisaged in the Financial Regulations of the Authority. Following the review of the Secretary-General's proposed budget by the Finance Committee and the decision and recommendation of the Council in relation to the budget, the Assembly adopted the budget of the Authority for the financial period 2001-2002 in the sum of $10,506,400. For the financial period 2003-2004, the Secretary-General proposes to maintain the

total proposed budget at a level similar to that for the financial period 2001-2002, with necessary allowances for inflation and other incremental costs. Adjustments are proposed to the allocation of funds under the various parts of the proposed budget in the light of the anticipated needs of the Authority over the financial period. The proposals of the Secretary-General relating to the budget for the financial period 2003-2004 are contained in document ISBA/8/A/4-ISBA/8/C/2.

B. Status of contributions

24. In accordance with the Convention and the Agreement, the administrative expenses of the Authority shall be met by assessed contributions of its members, until the Authority has sufficient funds from other sources to meet those expenses. The scale of assessment shall be based upon the scale used for the regular budget of the United Nations. For the financial period 2001-2002, the Assembly authorized the Secretary-General to establish the scale of assessment based on the scale used for the regular budget of the United Nations for 2000 and 2001 respectively.

25. As at 30 June 2002, contributions to the 2002 budget had been received from 43 members of the Authority. The total amount received was $3,019,434, or 47 per cent of the total assessed contributions. As at the same date, contributions to the 2001 budget had been received in full from 69 members of the Authority and in part from 6 members of the Authority. The total amount received was $4,652,928, or 96 per cent of the total budget for 2001. The Working Capital Fund as at 30 June 2002 stood at $377,686 (86 per cent of the total).

26. In respect of the previous years' budgets (up to 2001), total contributions of $411,385 remained outstanding from 68 members of the Authority as at 30 June 2002. In accordance with article 184 of the Convention and rule 80 of the Rules of Procedure of the Assembly, a member of the Authority which is in arrears in the payment of its financial contribution to the Authority shall have no vote if the amount of its arrears equals or exceeds the amount of the contribution due from it for the preceding two full years. As at 30 June 2002, 46 members of the Authority were in arrears of contributions for a period exceeding two years. They are: Antigua and Barbuda, Bahrain, Benin, Bolivia, Bosnia and Herzegovina, Cameroon, Cape Verde, Comoros, Democratic Republic of the Congo, Djibouti, Dominica, Equatorial Guinea, Gabon, Gambia, Georgia, Ghana, Grenada, Guatemala, Guinea, Guinea-Bissau, Haiti, Honduras, Iraq, Mali, Marshall Islands, Mauritania, Mozambique, Nauru, Papua New Guinea, Paraguay, Saint Vincent and the Grenadines, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Solomon Islands, Somalia, Suriname, the former Yugoslav Republic of Macedonia, Togo, Uganda, Ukraine, Uruguay, Vanuatu, Yugoslavia and Zambia.

27. In addition to the above, assessed contributions of $1,206,164 remain outstanding from four former provisional members of the Authority, namely Belarus ($13,463), Switzerland ($7,591), United Arab Emirates ($9,135) and United States of America ($1,175,975).

IX. Library and publications

28. The library manages the Authority's specialized collection of reference and research materials on matters relating to the law of the sea and deep seabed mining. The library serves the needs of member States, permanent missions and researchers interested in the law of the sea and ocean affairs. It also provides essential reference and research assistance to Secretariat staff. In addition, as part of the Office of Legal Affairs, the library is responsible for the archiving and distribution of the official documents of the Authority and assists with the publications programme. During the period covered by the present report, the library continued to handle requests from staff members and external users for information and documents. Most of the requests received were for information on the work, history and development of the Authority and on issues related to seabed mining and offshore development programmes, including information on the future potential for deep seabed mining, the environmental consequences of such activities and the biodiversity of the deep ocean.

29. The library continued to pursue an acquisition programme with a view to building a comprehensive collection of reference materials and strengthening the research capability of the existing collection. During the period covered under review, approximately 300 books, CD-ROMs and journals were acquired. A number of items were acquired through personal donations and from institutions and libraries, including the Virginia Institute of Marine Science and the United States National Oceanic and Atmospheric

Administration. The Secretary-General expresses his appreciation to all donors for their valuable contributions to the library.

30. In order to meet its key objective of providing ready access to information, the library continued to work towards full implementation of an electronic cataloguing system. The initial catalogue was made available for the use of delegates to the seventh session and will eventually be accessible online as an integral part of the Authority's central data repository (see para. 45). One of the important long-term projects the library has been working on is the systematic preservation and archiving of the original documents of the Seabed Committee, UNCLOS III and the Preparatory Commission. This entails preservation of the original documents, some of which are badly deteriorated, through copying onto acid-free archival paper and their subsequent binding. Binding of UNCLOS III and Preparatory Commission documents is almost complete. Once the documents have been reviewed, catalogued and indexed, it is intended to transfer them onto electronic mass storage media.

31. The regular publications of the Authority include an annual compendium of selected decisions and documents of the Authority (published in English, French and Spanish) and a *Handbook*, containing details of the membership of the Assembly and the Council, the names and addresses of permanent representatives and the names of the members of the Legal and Technical Commission and the Finance Committee. The Authority has also established a programme of legal and technical publications on matters of relevance to its work. In 2001, the Authority published a *Compendium of Basic Documents on the Law of the Sea*, which includes a consolidation of Part XI of the Convention and the annex to the 1994 Agreement, as well as the full text of the Convention, its nine annexes and associated resolutions, the implementation Agreements, the Regulations, the Final Act of UNCLOS III and other related materials. In 2002, the Authority published a volume containing the full text of the documents issued during the Secretary-General's informal consultations on outstanding issues relating to the deep seabed mining provisions of the Convention and will publish, later in 2002, a legislative history of article 170 and annex IV of the Convention. Most of these publications contain important historical material which has not been published elsewhere. With regard to its technical publications programme, the Authority has to date published the proceedings of its workshops, as well as technical studies on the prospects as at 2000 for global non-living resources on the extended continental shelf and on the status of polymetallic sulphides and cobalt-rich ferromanganese crusts. In addition, the Authority has produced a brochure and information kit, in English, French and Spanish, explaining the work of the Authority, as well as a complete set of the official documents of the Authority on CD-ROM.

32. The Authority's web site (http://www.isa.org.jm) contains essential information about the Authority in English, French and Spanish, as well as the texts of all the official documents and decisions of the organs of the Authority. Press releases are available in English and French. Official documents and press releases are available in a downloadable format to afford ready access by members of the Authority. A complete listing of all current publications issued by the Authority may also be found on the Authority's web site.

X. Substantive work of the Authority

33. Since the 1970s, considerable investments have been made in research and prospecting activities in the deep ocean with a view to identifying alternative sources of metals. The main focus of such research has been on deep seabed polymetallic nodule deposits, containing nickel, copper, cobalt and manganese. Despite optimistic predictions made in the 1970s and 1980s, a number of factors have inhibited progress towards commercial exploitation of polymetallic nodule deposits. These factors include the hostile environment in which exploration and mining will take place both as regards the open-ocean surface environment and the great depths at which polymetallic nodule deposits occur, the high costs involved in research and development of mining technology, and the fact that, under current economic conditions, deep seabed mining remains uncompetitive compared to land-based mining. As a result of these factors, the interest of the international consortia that were active in the 1970s in deep sea exploration has waned and the only entities that are currently actively conducting exploration activities are the seven contractors, mainly financed through government funding by sponsoring or participating States. In view of these factors, most of the efforts of the contractors are directed at technological research and development, long-term environmental studies and the collection and

analysis of environmental baseline data. Although a significant amount of basic and applied research has been carried out in the past or is still in progress, it is broadly accepted that the current level of knowledge and understanding of deep sea ecology is not yet sufficient to allow conclusive risk assessment of large-scale commercial seabed mining. Meanwhile, the prospects for commercial mining of the deep seabed remain uncertain.

34. To date, the substantive work programme of the Authority has been focused on the need to complete the Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area and enter into contracts for exploration with the seven pioneer investors that had been registered under resolution II of UNCLOS III. In addition, the Authority has commenced work on consideration of the appropriate type of regulation for prospecting and exploration for other types of potential mineral resources in the Area, namely hydrothermal polymetallic sulphides and cobalt-rich ferromanganese crusts.

35. In future, the substantive work of the Authority will be focused in four main areas. First, the Authority will carry out its supervisory functions with respect to contracts for exploration. Secondly, as required by the Convention and the Agreement, the Authority will promote and encourage the conduct of marine scientific research in the Area, and coordinate and disseminate the results of such research and analysis. The third main area of focus for the Authority will be on information-gathering and the establishment and development of databases of scientific and technical information with a view to obtaining a better understanding of the deep ocean environment. Finally, in accordance with its responsibilities under the Convention and the Agreement, the Authority will continue to create appropriate regulatory frameworks for the development of other mineral resources of the Area.

A. Contracts for exploration

36. On 29 March 2001, in accordance with the Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area, the Authority entered into the first 15-year contracts for exploration for polymetallic nodules in the deep seabed with the State enterprise Yuzhmorgeologiya (Russian Federation) and Interoceanmetal Joint Organization (IOM) (a consortium formed by Bulgaria, Cuba, the Czech Republic, Poland, the Russian Federation and Slovakia). On the same date, the Secretary-General also signed a contract with the Republic of Korea, which was also signed at Seoul on 27 April 2001 by the Minister for Maritime Affairs and Fisheries of the Republic of Korea, Woo-Taik Chung. A contract with China Ocean Mineral Resources Research and Development Association (COMRA) (China) was signed at Beijing on 22 May 2001. Contracts with Deep Ocean Resources Development Company (DORD) (Japan) and Institut français de recherche pour l'exploitation de la mer/Association française pour l'étude et la recherche des nodules (IFREMER/AFERNOD) (France) were signed at Kingston on 20 June 2001 and a contract between the Authority and the Government of India was signed, also at Kingston, on 24 March 2002. At the same time, the Government of India completed the schedule of relinquishment specified in its certificate of registration.

37. The signature of these exploration contracts is an important milestone because it brings to an end the interim regime established by resolution II. More importantly, it gives practical and real effect to the single regime for the Area established by the 1982 Convention, the 1994 Agreement and the Regulations and, as such, represents a significant step forward for the international community. The Authority is now in a contractual relationship with all the former registered pioneer investors. One of the consequences of the existence of such a contractual relationship is the obligation on contractors to submit annual reports in accordance with the provisions of the contract. In that regard, the standard clauses set out in annex 4 to the Regulations contain detailed provisions relating to the format and content of such annual reports. The objective of these reporting requirements is to establish a mechanism whereby the Authority, and particularly the Legal and Technical Commission, can be provided with the information necessary to carry out its responsibilities under the Convention, particularly those relating to the protection of the marine environment from the harmful effects of activities in the Area. Additional guidance to contractors in preparing their annual reports has been provided in the form of the recommendations for the guidance of contractors issued by the Legal and Technical Commission in 2001. The purpose of the recommendations for guidance is to describe the procedures to be followed in the acquisition of baseline data by contractors, including the monitoring to be

performed during or after any activities having the potential to cause serious harm to the environment, and to facilitate reporting by contractors. The first annual reports were due to be received at the end of March 2002. At the time of preparation of the present report the first such reports had been received. It is expected that these reports will be analysed and given detailed consideration by the Legal and Technical Commission at its meeting during the eighth session.

B. Marine scientific research in the Area

38. One of the most important, but so far unrealized functions of the Authority is to promote and encourage the conduct of marine scientific research in the Area, and to coordinate and disseminate the results of such research and analysis. Under article 256 of the Convention, all States and competent international organizations have the right to conduct marine scientific research in the Area. However, unlike the situation in other jurisdictional zones (including the high seas), marine scientific research in the Area is to be carried out "for the benefit of mankind as a whole". Paragraphs 2 and 3 of article 143 elaborate upon the respective roles of the Authority and States parties in relation to marine scientific research in the Area. In accordance with article 143, paragraph 2, the Authority is to "promote and encourage the conduct of marine scientific research in the Area, and shall coordinate and disseminate the results of such research and analysis when available." In accordance with paragraph 3, States parties shall promote international cooperation in marine scientific research in the Area, including by participating in international programmes and by ensuring that programmes are developed through the Authority or other international organizations for the benefit of developing States and technologically less developed States with a view, inter alia, to strengthening their research capabilities.

39. Articles 143 and 256 represent a delicate balance between opposing views on whether or not marine scientific research in the Area was to be subject to the jurisdiction and control of the Authority. While UNCLOS III was unable to reconcile conflicting views on the distinction between "fundamental" and "applied" research in the various jurisdictional zones established in the Convention, it is clear that, under article 143, marine scientific research in the Area is to be considered separate and apart from marine scientific research on the high seas and the results of such research are to be utilized for the benefit of mankind as a whole. Consequently, it will become necessary for the Authority to give more detailed consideration as to how best to realize the ideals set out in the Convention and the Agreement concerning the dissemination of the benefits of marine scientific research and technology transfer. One of the key practical questions that arises in this context is how to ensure the fair and equitable distribution of the benefits from such research without creating unreasonable obstacles to such activities as commercial biotechnological development and without limiting unreasonably commercial incentives, such as intellectual property rights, for work undertaken on the genetic resources of the Area.

40. The most immediate and practical way in which the Authority has begun to implement its responsibilities under the Convention is through its programme of technical workshops. Since 1998, the Authority has established a pattern of workshops and seminars on specific issues related to deep seabed mining, with participation by internationally recognized scientists, experts, researchers and members of the Legal and Technical Commission as well as representatives of contractors, the offshore mining industry and member States. Previous workshops dealt with the assessment of environmental impacts from activities in the Area, the development of technology for deep seabed mining, and the status and prospects of deep sea mineral resources other than polymetallic nodules.

41. The last such workshop, in 2001, made specific recommendations on standards to be used in the acquisition and interpretation of environmental baseline data. The workshop recommended that the Authority establish centralized environmental databases that would enable contractors and researchers to exchange and share environmental data collected by other contractors and researchers and that workshops be convened to allow scientists and technicians involved in environmental monitoring to share, compare and standardize data and processes for the evaluation of such data. In addition, the workshop made recommendations on areas of cooperative biological research, including international cooperation in developing a taxonomy, on specific questions concerning the way in which deep sea animal communities are likely to respond to the anticipated effects of deep seabed mining. In this regard, one of the

key problems that has been identified is that environmental studies on the effects of seabed mining have not been carried out or coordinated on a global or regional level. Although national and multinational research projects have been carried out since the 1970s, including by the current contractors, such projects are at different levels of completion and vary both in their methodology and in their objectives. Further, since the selection of sites for such research projects is determined by the location of the allocated exploration areas rather than upon scientific criteria, it is considered that effective assessment of the potential environmental effects of deep seabed mining will require cooperative and coordinated international research on common environmental problems. Such research will assist in providing a sound scientific basis for the Authority to establish rules, regulations and procedures relating to the protection of the marine environment.

42. To further this aspect of its work, the Authority is collaborating in a research project with the University of Hawaii to study the biodiversity, species range and gene flow in the abyssal Pacific nodule province with a view to predicting and managing the impacts of deep seabed mining. Other institutions participating in the project include the British Natural History Museum; the Southampton Oceanography Centre, United Kingdom of Great Britain and Northern Ireland, Shizuoka University, Japan; and IFREMER, France. Recognizing that it is virtually impossible to evaluate the threat of mining to deep sea biodiversity without a knowledge of the number of species residing in areas that are likely to be perturbed by mining operations and the typical geographic ranges and rates of gene flow of such species, the objective of the project is to use molecular techniques to evaluate biodiversity levels, geographic ranges and rates of gene flow for three of the dominant animal groups living in the Clarion-Clipperton zone. The animal groups selected for study are polychaetes, nematodes and foraminifera. The project will involve field sampling at three sites within the nodule province, followed by sample preservation and DNA-based molecular genetic analysis. It will be the first time that modern molecular and classical morphological techniques have been combined in the study of biodiversity in the nodule province, allowing for rigorous evaluation by an international team of scientists of species richness, geographic ranges and rates of gene flow. The major outputs of the project will include a detailed report to the Authority on the significance of the project findings to the potential environmental impacts of deep seabed mining, including specific recommendations for managing risks to biodiversity, an archived collection of biota for use by the scientific community in future and the dissemination of research findings both to the general public and to the scientific community through peer-reviewed scientific publications.

43. From 26 July to 2 August 2002, immediately prior to the eighth session, the Authority will convene the next in its series of workshops. This workshop will build upon the results of previous workshops by examining the prospects for international collaboration in marine environmental research to enhance understanding of the deep sea environment, including its biodiversity. The workshop will review various proposals for research topics to be carried out through international cooperation. The proposed research areas were identified by a group of scientific experts which met in March 2002. The scientific experts based their recommendations and proposals on a detailed review of the research issues identified in the previous workshops convened by the Authority, particularly those concerning environmental research on deep sea ecosystems. Research issues suitable for international cooperation were selected based on the amount of data and information that could be gathered in a reasonable period in order to address specific issues that are required by the Authority to effectively carry out its responsibilities. In addition, such research issues should complement the existing programmes of contractors and yield benefits to contractors from cooperation. As with previous workshops, a number of experts will be invited to present papers on issues relevant to the subject matter, but participation in the workshop will be open to representatives of all members of the Authority.

C. Information and data relating to the international seabed area

44. The third main area of focus for the Authority is on information-gathering and the establishment and development of databases of scientific and technical information. Discussions both in the Legal and Technical Commission and in the workshops organized by the Authority have highlighted the need for scientists and researchers to collect and exchange data and information according to international standards.

While large quantities of data and information on marine mineral resources have been collected, they are dispersed widely among various organizations and companies worldwide, in various formats and standards, and are usually not readily accessible to potential users.

45. To overcome this situation, work began in 2000 on the establishment of a central data repository (CDR). The objective of the CDR is to collect and centralize all public and private data and information on marine mineral resources available to the Authority. This will enable the Authority to reconcile available data and information from different sources using uniform data formats, evaluate those data and draw conclusions from them. The CDR will display the acquired data and information and make possible the elaboration of listings, graphs and maps as well as quantitative mineral assessments. It will also enable the Authority to process information for the purposes of preparing technical reports and producing data on CD-ROM. In the preliminary phase of development, information was collected on the formats and availability of relevant data from 18 institutions worldwide. In 2001, the process of collecting data and information commenced by the collection of data relating to polymetallic nodules and cobalt-rich ferromanganese crusts. Useful data on polymetallic nodules were obtained from the United States Government Geophysical Data Center (NGDC). Data on cobalt-rich ferromanganese crusts was obtained from the United States Geological Survey, including information on the location, depth and thickness of known crust deposits and geochemical data as well as a reduced data set with a single entry for each location.

46. The current phase of development focuses on the development and testing of an integrated database system that can be used as a management and research tool. The system is web-enabled and can be easily integrated into the existing MapInfo geographic information system used by the Authority. Late in 2001, the Secretariat acquired a relational database management system to support the development process. It is intended that the CDR will ultimately be accessible through the Authority's web site by authorized representatives of member States, scientists and researchers. Appropriate interfaces are being developed to allow access to the database in this manner. These interfaces will provide a dynamic data analysis tool and users will be able to search the database specifying their own searching criteria. In addition, full online documentation is available for both the polymetallic nodules and the cobalt-rich crusts, providing a description of the data content of the CDR, a description of the various procedures and protocols used in reformatting the data for entry into the CDR and statistical summaries of the data. The CDR will also provide an interactive interface to the library catalogue, as well as to the official documents, press releases and publications of the Authority. To improve accessibility to the web site, the Authority proposes to invest in infrastructure enhancement in order to secure a substantial increase in bandwidth as well as a more secure Internet backbone.

47. During the next two years, the Authority will continue to develop the CDR. In particular, it will resume the collection of data on polymetallic nodules and integrate them into the database structure, integrate data from other resources types, such as polymetallic sulphides, develop and integrate an environmental database and develop and integrate graphical interfaces to provide visual data analysis tools over the Internet.

D. Draft regulations for prospecting and exploration for polymetallic sulphides and cobalt-rich ferromanganese crusts in the Area

48. It will be recalled that, at the resumed fourth session of the Authority, in August 1998, the representative of the Russian Federation had made a request to the Authority to adopt rules, regulations and procedures for exploration for polymetallic sulphides and cobalt-rich ferromanganese crusts. In the light of the request to the Authority by the Russian Federation, the Secretariat commenced work in 1999 on a review of the status of knowledge and research on resources other than polymetallic nodules and in June 2000 convened a workshop on the status of and prospects for deep seabed mineral resources other than polymetallic nodules, in particular deep sea polymetallic massive sulphide deposits and cobalt-bearing ferromanganese encrustations.

49. During the seventh session of the Authority, the Secretary-General presented to the Council a paper prepared by the Secretariat on considerations relating to the regulations for prospecting and exploration for polymetallic sulphides and cobalt-rich ferromanganese

crusts in the Area. Following extensive discussions, the Council decided to continue consideration of such issues at the eighth session in order to give the members of the Council the opportunity to consider further the important conceptual issues involved. The Council also decided to request the Secretariat to collect and assemble necessary information which would facilitate further discussion in the Council on important considerations raised in the Secretariat's paper as well as to assist the Legal and Technical Commission in its work. The Council further decided that, in the meantime, the Legal and Technical Commission would commence consideration of the issues involved in the elaboration of such regulations. In the light of the request by the Council, the Secretariat has organized a seminar, open to all members and observers, as well as members of the Legal and Technical Commission, which will take place in Kingston on 7 August 2002, during the eighth session. The seminar will consist of presentations by scientific and technical experts and is intended to provide the members with background information on the status and characteristics of deep sea polymetallic sulphides and cobalt-rich ferromanganese crusts as well as information on the marine environment where these minerals are located. A summary of the presentations is contained in document ISBA/8/A/1.

50. In this regard, one specific issue which is becoming of increasing concern to the international community is the question of the management of threats to the biodiversity of hydrothermal vent fauna and in particular the legal regime to be applied to bioprospecting (the harvesting for commercial purposes of genetic resources) in the Area. The international scientific community has concluded that deep sea hydrothermal vents are particularly sensitive because of their high percentage of endemic species and the unique nature of many of the species found there. Several such sites are already under potential threat either from intensive scientific exploration, including bioprospecting, or from future mining activities.

51. While it has been generally assumed that activities directed at bioprospecting are, prima facie, an exercise of the freedom of the high seas under article 87 of the Convention, it is important to note that the freedoms referred to in article 87 are not absolute. They are to be exercised "under the conditions laid down by this Convention and by other rules of international law" and "with due regard for the interests of other States in their exercise of the freedom of the high seas, and also with due regard for the rights under this Convention with respect to activities in the Area". The essential problem for the Authority is that the same hydrothermal vent sites that are being targeted by scientific researchers and bioprospectors are also of considerable interest to prospective seabed miners. There is therefore considerable overlap, as well as potential for conflict, between the Authority's responsibilities in respect of the marine environment and activities directed at bioprospecting.

52. Although the role of the Authority in the regulation of activities in the Area is directed primarily at exploration for and exploitation of mineral resources, the Authority also has a broader regulatory role with respect to the protection and preservation of the marine environment (including its biodiversity) as well as with respect to marine scientific research in the Area generally. This is made clear, inter alia, by (a) article 145 of the Convention, which states that "necessary measures shall be taken in accordance with this Convention with respect to activities in the Area to ensure effective protection for the marine environment from harmful effects which may arise from such activities" and (b) other provisions within both the Convention and the Authority's regulations that enable or require the adoption of rules, regulations and procedures for environmental protection. In addition, article 165, paragraph 2, of the Convention requires the Legal and Technical Commission to, inter alia, make recommendations to the Council on the protection of the marine environment, take into account assessments of environmental implications when formulating the rules, regulations and procedures for exploration and exploitation referred to in article 162, paragraph 2 (o), of the Convention, and make recommendations to the Council regarding the establishment of a monitoring programme.

53. It is suggested that the solution to the problem of managing biodiversity in the Area is essentially one of better implementation of existing legal regimes and integration at the institutional level. While management of all the world's hydrothermal vent sites is an unrealistic goal, the possibility of developing internationally agreed criteria for the identification of sites of critical importance and sensitivity may be considered. In this regard, several States have already taken action to establish marine protected areas around

hydrothermal vent sites in areas under national jurisdiction. These include Canada, which established pilot offshore marine protected areas in 1998 at the Bowie Seamount and at the Endeavour Segment of the Juan de Fuca Ridge; and Portugal, which in 1998 designated the Dom João de Castro Seamount as a Special Area for Conservation and a Site of European Community Importance in conformity with the 1992 European Commission Habitat Directive. In addition, proposals have been made to designate part of the Lucky Strike area, on the Mid-Atlantic Ridge, as a Marine Protected Area under the OSPAR Convention, and there is increasing discussion within the international scientific and legal community of the idea of marine protected areas on the high seas. Among the key recommendations made by the InterRidge Workshop on Management and Conservation of Hydrothermal Vent Ecosystems in 2000 were the need to establish a central clearing house for exchange of information about research activities on hydrothermal vent sites as well as the need to establish a code of conduct for all users of such sites. The workshop further noted the need for the establishment of a global network of sites for integrated study and long-term scientific observation.

54. In developing the regulations for prospecting and exploration for polymetallic sulphides and cobalt-rich ferromanganese crusts, the Authority will clearly need to take into account the particularly sensitive nature of the sites where such resources occur. Any regulatory framework will need to contain provisions relating to the collection of baseline data and information on the biological characteristics of areas under exploration, as well as procedures for environmental impact assessment. As a global organization, the Authority will not only benefit from close collaboration with those who are already conducting scientific research on hydrothermal vents, but also has the potential to provide a forum for the discussion and development of principles for the better implementation of the existing legal regime for marine scientific research in the Area and the management of biodiversity in the Area.

XI. Current matters relevant to deep seabed mining

55. There are a number of other matters which are of interest to the Authority and which have the potential to impact upon the work of the Authority in the future. These include the implications for the Authority of the recently concluded UNESCO Convention on the Protection of the Underwater Cultural Heritage and the future implications of the exploitation of non-living resources on the continental shelf.

A. Underwater cultural heritage

56. On 2 November 2001, the thirty-first General Conference of UNESCO adopted a Convention on the Protection of the Underwater Cultural Heritage. The Convention, which was adopted by a vote of 87 in favour and 4 against, with 15 abstentions, will enter into force three months after the deposit of the twentieth instrument of ratification, acceptance, approval or accession. The Convention is of relevance to the Authority insofar as it purports to deal with the protection of underwater cultural heritage in the Area.

57. In relation to the Area, articles 11 and 12 of the UNESCO Convention state that States parties to that Convention have a responsibility to protect underwater cultural heritage in the Area in conformity with that Convention and article 149 of the 1982 Convention. In particular, States parties shall require their nationals or vessels flying their flag to report to them any activity directed at underwater cultural heritage located in the Area and shall notify the Secretary-General of the International Seabed Authority of such discovery or activity. Any State party with a verifiable link to the underwater cultural heritage concerned may declare an interest in being consulted on how best to protect it and the Convention provides for a system of consultation and coordination in which the Authority shall also be entitled to participate. It will be recalled that article 149 of the 1982 Convention provides that all objects of an archaeological and historical nature found in the Area shall be preserved or disposed of for the benefit of mankind as a whole, particular regard being paid to the preferential rights of the State or country of origin, or the State of cultural origin, or the State of historical and archaeological origin. The Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area adopted by the Authority contain provisions, fully consistent with article 149, which would require contractors to notify the Secretary-General of the Authority of any finding in the Area of an object of an archaeological or historical nature and to take all reasonable measures to avoid disturbing

such object. The Secretary-General shall transmit such information to the Director-General of UNESCO.

58. In the event that the UNESCO Convention enters into force, it would appear that there are two main implications for the Authority. On the one hand, in approving an application for a plan of work for exploration in an area where a finding of underwater cultural heritage has been notified in accordance with the UNESCO Convention, the Legal and Technical Commission and the Council would need to take into account the existence of such finding or activity, although there is no suggestion that the mere existence of an item of underwater cultural heritage in a proposed exploration area would prevent the approval of a plan of work for exploration. On the other hand, in the event that the Authority is notified by a contractor of the finding in its exploration area of an object of an archaeological or historical nature, a State party to the UNESCO Convention may wish to invoke the provisions of articles 11 and 12 of that Convention where such object is also part of the underwater cultural heritage. It must be noted, in any event, that the rights and obligations of the contractor arise from the terms of its contract with the Authority.

B. Activities on the continental shelf

59. Article 82 of the Convention provides for a system of revenue sharing with respect to the exploitation of the non-living resources of the continental shelf where the shelf extends beyond 200 nautical miles from the baseline. The article provides that coastal States are to make payments or contributions in kind in respect of the exploitation of such resources and sets out the modalities for such payments or contributions. Any such payments or contributions are to be made through the Authority and distributed to States parties to the Convention in accordance with the criteria set out in article 82, paragraph 4.

60. In 2001, the Authority published a technical report on the prospects as at 2000 for global non-living resources on the extended continental shelf. The report contained an assessment of the potential for non-living resources to occur in areas where there exists the potential for claims to a continental shelf extending beyond 200 nautical miles, based on a statistical evaluation of known occurrences and reserves, the geologic environments favourable for their formation, models for sediment type and thickness, and basement composition. It was found that the major resource potential in those areas is held in ferromanganese nodules and crusts, hydrocarbons and gas hydrates. Regions of high levels of hydrocarbon resource potential, combined with areas where there is potential for claim to a continental shelf extending beyond 200 nautical miles, are found throughout the Atlantic seaboard of North and South America (including the Labrador Sea), northern and western Norway, south and west of the United Kingdom and Ireland, north-west Africa, south-west Africa, south-east Africa and east of the Horn of Africa, south of Pakistan, east and west of India, south of Tasmania, north of New Zealand and east of Australia in the Sea of Okhotsk and off the Alaskan Arctic seaboard. Regions identified as having high gas hydrate potential combined with areas where there is potential for claims to a continental shelf extending beyond 200 nautical miles include the Arctic Ocean, the North-East Atlantic, the Barents Sea, the Bay of Bengal and the Sea of Okhotsk. The report also noted, however, that in most of those areas the offshore hydrocarbon resources are currently sub-marginal to para-marginal.

61. On the other hand, technological improvements in recovery efficiency and greater access to deep water areas are already increasing the range of economically recoverable resources offshore and there is considerable potential for exploitation of these resources in the future. As a result of improved technology and risk management practices which have greatly reduced development costs, offshore hydrocarbon exploration and development has moved into some of the deepest deepwater sedimentary areas on the continental shelf. Currently deepwater and ultra-deep water activities are focused on the Atlantic Margin (off Norway and the United Kingdom), the Gulf of Mexico, West Africa (offshore Angola and Nigeria) and Brazil. In the past two years, other areas have come to the attention of deepwater developers, including areas off Labrador and Nova Scotia, Mediterranean Sea, East India and New Zealand. In the Gulf of Mexico, deepwater production surpassed shallow-water production in 2000 for the first time since lease activities in that region started in 1996. Overall, production from deepwater areas of the Gulf of Mexico has been increasing rapidly, with deepwater wells now accounting for about two thirds of total output. The rated water depth for oil rigs such as *Discoverer Spirit* owned by the United States

corporation Transocean Sedco Fores was as much as 10,000 ft (3,048 metres) while its well water depth was 7,308 ft. (2,494 metres). In waters offshore Brazil, the rig *Deepwater Expedition* is operating at a rated water depth of 10,170 ft (>3,000 m) and a well water depth at 7,559 ft.000 (>2,300 m). Off the Atlantic coast of Brazil, the third round of bidding for offshore blocks took place in June 2001, with 53 blocks on offer, 43 of which were offshore, mostly in deepwater and ultra-deepwater areas. The bidding round attracted major international oil companies such as ExxonMobil, Royal Dutch Shell, TotalFinaElf and Statoil, as well as some smaller companies that were new to the Brazilian oil sector, such as United States-based Ocean Energy and Wintershall of Germany. Petrobrás of Brazil won 13 blocks and will be a joint venture partner in two others with ExxonMobil and TotalFinaElf. What is significant is that most of the bids were made in respect of relatively unexplored areas in over 6,560 feet (2,000 metres) of water.

62. In these circumstances, it is timely for the Authority to begin to consider how the provisions of article 82 may be implemented in practice.

XII. Future directions

63. The increasingly scientific and technical emphasis in the work of the Authority has a number of consequences for the future direction of the Authority. One consequence is the need to consider how best to utilize the available financial and human resources to meet the demands of the changing work programme. Effective performance of the substantive work programme described in this report is likely to require over time a significant strengthening of the technical capabilities of the Secretariat.

64. Another consequence of such a development is the need to review the current pattern of meetings of the Authority to determine whether it fully meets the requirements of the various organs and bodies involved and to see whether it represents the most efficient mechanism for carrying out the necessary technical work. The organizational phase of the Authority's work is now complete. All the necessary rules, regulations and procedures for the internal administration of the Authority are now in place and the Authority has implemented a budget structure which requires the Assembly to adopt a budget only once every two years. At the same time, it is apparent that there has in recent years been great difficulty in securing the required quorum of member States for meetings of the Assembly in Kingston; a development which adversely affects the ability of the Assembly to take decisions. Indeed, over the past two sessions, the Assembly has needed to meet on only 6 days out of 30 days of scheduled meetings. In these circumstances, it is suggested that it may be appropriate to consider the possibility that the Assembly should meet only once in every two years, when it will adopt a budget and work programme and hold the necessary elections for seats on the Council. At that time, there should also be opportunity for a general debate on future directions for the Authority. Such a debate should take place on the basis of an expanded report of the Secretary-General, which would deal in more general terms with current trends in deep seabed exploration, ecology, environment and prospects for resource development. In the meantime the Council should continue to meet on an annual basis, subject to its workload. While these measures may promote greater efficiency in the work of the Authority, the essential problem would still remain, given the specific requirement under the Convention for a quorum, that is, how to secure broad participation in meetings of the Assembly in order to ensure that the views of all member States are taken into consideration and that there is ongoing involvement of a political and legal nature in the work of the Authority.

65. It is anticipated that, for the foreseeable future, the main catalyst behind the work of the Authority will be the Legal and Technical Commission, combined with a strengthening of the technical expertise of the Secretariat. In addition to its supervisory functions with respect to the contracts for exploration, there are a number of issues which the Legal and Technical Commission will need to consider in detail before they are referred to the Council.